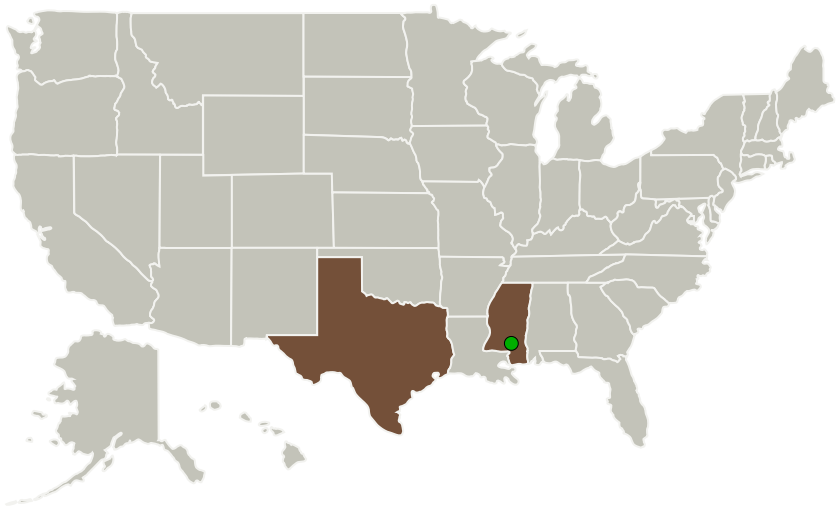
Luminit Optical Tank-level Sensing System, Phase I

Completed Technology Project (2011 - 2012)

Project Introduction

To address the NASA need for innovative methods to measure liquid propellant tank volume and tank fluid level with improved accuracy, repeatability, and minimal tank entries for maintenance and calibration, Luminit, LLC, proposes to develop a new non-contact Luminit Optical Tank-level Sensing system (LOTS), based on the optical measurement of a small spotlight shone on the surface of the liquid. This approach incorporates commercial off-the-shelf components and Luminit opto-mechanical design, which enables us to meet NASA requirements for a novel liquid level sensor for low-density fluids such as liquid hydrogen, and offers the possibility of remote operation, compact size. In Phase I, Luminit will demonstrate the feasibility of accurate measurement of a low-density fluid by building and testing a proof-of-concept prototype, which will reduce development risk in Phase II. In Phase II, Luminit plans to build a functional prototype for cryogenic liquid level measurements. The demonstrated results will offer NASA a replacement for the multiple float switches currently in use. LOTS is expected to be at TRL 2 by the end of Phase I, with the results of this project paving the way to reach TRL 6 by the end of Phase II.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Luminit, LLC	Lead Organization	Industry	Torrance, California
Southern Methodist University	Supporting Organization	Academia	Dallas, Texas
Stennis Space Center(SSC)	Supporting Organization	NASA Center	Stennis Space Center, Mississippi

Primary U.S. Work Locations	
Mississippi	Texas

Project Transitions

February 2011: Project Start

February 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138282)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Luminit, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

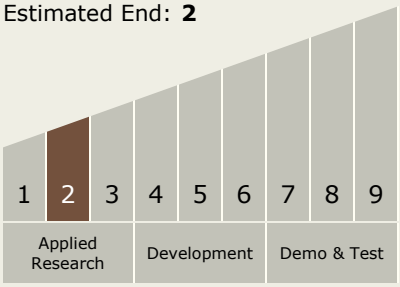
Carlos Torrez

Principal Investigator:

Dmitry Voloschenko

Technology Maturity (TRL)

Current: **2**
Estimated End: **2**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.3 Informatics and Decision Support Systems

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System